

Appendix Table 5. Preliminary small-plot yield response to liquid swine manure and fertilizer application from each demonstration site, 2000.

**2000 Swine Manure Nutrient Utilization Project****N Fertilizer CORN Small Plot Data Summary**

Field sites listed alphabetically by county name.

<sup>1</sup> Manure strip trt. N-based application rate targets: (before corn) Low = 75 lb N/ac, High = 150 lb N/ac; (before SB) Low = 100 lb N/ac, High = 200 lb N/ac.<sup>2</sup> Blanket fertilizer application of 60 lb P<sub>2</sub>O<sub>5</sub>/acre and 60 lb K<sub>2</sub>O/acre applied to fertilizer N rate small-plot area.<sup>3</sup> Late-Spring soil NO<sub>3</sub><sup>-</sup>-N (LSNT) values offer a soil sample-based estimate of plant-available soil NO<sub>3</sub><sup>-</sup>-N in the top foot of soil when corn is 6-12 in. tall.<sup>4</sup> SPAD chlorophyll meter readings measure relative corn ear leaf greenness when corn is near R1 growth stage. Larger values = greener leaves.<sup>5</sup> End-of-season cornstalk test measures NO<sub>3</sub><sup>-</sup>-N in the lower stalk at physiological maturity. Larger values suggest greater plant NO<sub>3</sub><sup>-</sup>-N avail. "BDL" is < 20 ppm.**Field sites with liquid swine manure applied before 2000 corn crop (first-year manure treatment effect evaluation).**

County	Field site (Nearby town)	Manure <sup>1</sup> Applied (lb/acre) in Manure	Estimated Total Nutrients				Fertilizer N Rate (lb/acre) Effect on Small-Plot Corn Yield (bu/acre) <sup>2</sup>				Fertilizer N Rate (lb/acre) Effect on Late-Spring Soil NO <sub>3</sub> <sup>-</sup> -N (ppm) <sup>3</sup>				Fertilizer N Rate (lb/acre) Effect on SPAD Chlorophyll Meter Readings at R1 Stage <sup>4</sup>				Fertilizer N Rate (lb/acre) Effect on End-of-Season Cornstalk NO <sub>3</sub> <sup>-</sup> -N (ppm) <sup>5</sup>			
			Strip Trt.	N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	0	40	80	120	0	40	80	120	0	40	80	120	0	40	80	120
Clay	Spencer	Check	0	0	0	0	142	155	199	189	11	--	29	--	42	48	55	54	20	28	133	702
"CORN after SB" field site		"Residual" Check Treatment <sup>a</sup>					174	195	204	198	17	--	31	--	48	52	55	54	28	110	402	2062
Manure surface-applied 4/26 & field cultivator-inc. 4/27/2000		Low <sup>1</sup>	77	46	38	0	187	196	195	205	19	--	35	--	50	55	54	56	23	179	1265	3047
		High <sup>1</sup>	154	91	77	0	205	199	201	203	34	--	48	--	54	56	57	58	1117	2743	5063	4967

<sup>a</sup> "Residual" check treatment strip had 350 lb total N - 255 lb total P<sub>2</sub>O<sub>5</sub> - 155 lb total K<sub>2</sub>O applied as swine manure prior to 1999 soybean crop.

		N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	0	40	80	120	0	40	80	120	0	40	80	120	0	40	80	120	
Hardin	Buckeye	Check	0	0	0	184	195	196	212	19	--	27	--	54	58	59	60	200	215	270	1248
"CORN after SB" field site		P-100	82	100	81	185	194	201	191	36	--	45	--	60	61	60	61	5625	4998	5378	6198
Manure injected 3/30/2000		N-193	193	236	191	198	190	184	197	51	--	47	--	61	63	62	64	5913	6505	7343	6303

		N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	0	40	80	120	0	40	80	120	0	40	80	120	0	40	80	120	
Plymouth	LeMars	Check	0	0	0	Small-plot yields at this site not presented due to drought-caused yield variability.				12	--	21	--	56	60	59	59	1191	1979	3688	4437
"CORN after SB" field site		Low	308	199	164					41	--	50	--	58	60	58	60	4955	5870	5993	6818
Manure injected 3/29/2000		High	526	340	280					64	--	67	--	61	61	62	61	6625	6828	6715	8105

		N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	0	40	80	120	0	40	80	120	0	40	80	120	0	40	80	120	
Washington	West Chester	Check	0	0	0	166	187	202	173	9	--	21	--	56	60	59	59	20	31	210	1127
"CORN after SB" field site		Fall-applied anhydrous NH <sub>3</sub> (140 lb N/ac)				187	181	188	174	26	--	42	--	Data not collected				3172	1908	2905	4650
Manure injected 11/1999		Manure	216	188	180	188	206	198	175	29	--	45	--					3915	6582	5408	7103

		N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	0	40	80	120	0	40	80	120	0	40	80	120	0	40	80	120	
Webster	Fort Dodge	Check	0	0	0	140	157	170	168	9	--	19	--	49	53	56	55	50	85	836	1037
"CORN after SB" field site		Low	70	48	43	157	173	173	183	15	--	23	--	53	54	53	54	1352	2245	3197	3907
Manure injected 4/24/2000		High	139	96	86	161	166	167	160	29	--	36	--	56	55	57	56	3688	4637	4457	5428

Appendix Table 5 continued. Preliminary small-plot yield response to liquid swine manure and fertilizer application from each demonstration site, 2000.

**2000 Swine Manure Nutrient Utilization Project**  
**P Fertilizer CORN Small Plot Data Summary**

<sup>1</sup> Blanket fertilizer application of 150 lb total N/acre and 60 lb K<sub>2</sub>O/acre applied to fertilizer P<sub>2</sub>O<sub>5</sub> rate small-plot area.

<sup>2</sup> Effect of P fertilizer on early-season plant growth and plant P uptake was measured by sampling aboveground vegetation of 10 plants at V6 (6-leaf) growth stage.

<sup>3</sup> Initial and post-harvest 0-6 in. depth soil samples were collected to measure change in Bray-1 soil test P values (initial Bray-1 soil test P range: 12-17 ppm).

**Field sites with liquid swine manure applied before 2000 corn crop (first-year manure treatment effect evaluation).**

County	Field site (Nearby town)	Manure Strip Trt.	Estimated Total Nutrients			Fertilizer P <sub>2</sub> O <sub>5</sub> Rate (lb/acre) Effect on Small-Plot Corn Yield (bu/acre) <sup>1</sup>				Fertilizer P <sub>2</sub> O <sub>5</sub> Rate (lb/acre) Effect on Early Plant Growth (grams/10 plants) <sup>2</sup>				Fertilizer P <sub>2</sub> O <sub>5</sub> Rate (lb/acre) Effect on Plant P Uptake (mg P/plant) <sup>2</sup>				Fertilizer P <sub>2</sub> O <sub>5</sub> Rate (lb/acre) Effect on Post-Harvest Bray-1 P Soil Test (ppm) <sup>3</sup>			
			Applied (lb/acre) in Manure			0	20	40	60	0	20	40	60	0	20	40	60	0	20	40	60
			N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O																
Webster	Fort Dodge	Check	0	0	0	181	177	179	183	42	39	39	38	1.58	1.60	1.52	1.44	15	16	21	18
"CORN after SB"	field site	Low	70	48	43	173	178	173	170	50	49	48	54	2.09	2.15	1.96	2.03	17	21	20	29
Manure injected 4/24/2000		High	139	96	86	174	173	172	171	49	50	44	54	2.22	2.23	2.08	2.46	19	22	20	21

Appendix Table 5 continued. Preliminary small-plot yield and related measures response to liquid swine manure and fertilizer application from each demonstration site, 2000.

**2000 Swine Manure Nutrient Utilization Project**  
**P Fertilizer SOYBEAN Small Plot Data Summary**  
**Field sites listed alphabetically by county name.**

<sup>1</sup> Manure strip trt. N-based application rate (lb total N/acre) targets: Low = 100, High = 200.

<sup>2</sup> Blanket fertilizer application of 60 lb K<sub>2</sub>O/acre applied to fertilizer P<sub>2</sub>O<sub>5</sub> rate small-plot area.

<sup>3</sup> Effect of P fertilizer on early-season plant growth and plant P uptake was measured by sampling aboveground vegetation of 10 plants at V6 (6-leaf) growth stage.

<sup>4</sup> Initial and post-harvest 0-6 in. depth soil samples were collected to measure change in Bray-1 soil test P values.

Initial Bray-1 soil test P range by site: Clay - 43 to 60 ppm; Hardin - 51 to 120 ppm; Webster - 16 to 34 ppm

**Field sites with liquid swine manure applied before 2000 soybean crop (first-year manure treatment effect evaluation).**

County	Field site (Nearby town)	Manure <sup>1</sup> Strip Trt.	Estimated Total Nutrients			Fertilizer P <sub>2</sub> O <sub>5</sub> Rate (lb/acre) Effect on Small-Plot Soybean Yield (bu/acre) <sup>2</sup>				Fertilizer P <sub>2</sub> O <sub>5</sub> Rate (lb/acre) Effect on Early Plant Growth (grams/10 plants) <sup>3</sup>				Fertilizer P <sub>2</sub> O <sub>5</sub> Rate (lb/acre) Effect on Plant P Uptake (mg P/plant) <sup>3</sup>				Fertilizer P <sub>2</sub> O <sub>5</sub> Rate (lb/acre) Effect on Post-Harvest Bray-1 P Soil Test (ppm) <sup>4</sup>			
			Applied (lb/acre) in Manure			0	20	40	60	0	20	40	60	0	20	40	60	0	20	40	60
			N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O																
Clay	Spencer	Check	0	0	0	57	59	57	57	5	6	5	5	0.18	0.24	0.18	0.19	54	63	58	58
"SB after CORN"	field site	Low <sup>1</sup>	114	73	54	57	59	56	60	7	6	6	7	0.24	0.22	0.22	0.25	57	72	72	81
Manure appl. 4/26, inc. 4/27/00		High <sup>1</sup>	228	146	109	59	55	53	57	7	7	7	8	0.29	0.25	0.26	0.33	77	61	95	93

County	Field site (Nearby town)	Manure <sup>1</sup> Strip Trt.	Estimated Total Nutrients			Fertilizer P <sub>2</sub> O <sub>5</sub> Rate (lb/acre) Effect on Small-Plot Soybean Yield (bu/acre) <sup>2</sup>				Fertilizer P <sub>2</sub> O <sub>5</sub> Rate (lb/acre) Effect on Early Plant Growth (grams/10 plants) <sup>3</sup>				Fertilizer P <sub>2</sub> O <sub>5</sub> Rate (lb/acre) Effect on Plant P Uptake (mg P/plant) <sup>3</sup>				Fertilizer P <sub>2</sub> O <sub>5</sub> Rate (lb/acre) Effect on Post-Harvest Bray-1 P Soil Test (ppm) <sup>4</sup>			
			Applied (lb/acre) in Manure			0	20	40	60	0	20	40	60	0	20	40	60	0	20	40	60
			N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O																
Hardin	Buckeye	Check	0	0	0	49	49	49	48	27	26	26	30	0.96	0.96	0.92	1.06	98	100	101	107
		P-40	62	41	43	48	47	47	49	26	26	33	25	0.98	0.98	1.24	0.96	107	125	134	117
		P-100	83	100	81	48	48	46	42	26	32	31	27	0.93	1.25	1.15	1.00	101	131	122	130
		N-192	192	232	188	51	55	47	47	28	30	31	27	1.09	1.12	1.36	0.91	120	141	104	129

County	Field site (Nearby town)	Manure <sup>1</sup> Strip Trt.	Estimated Total Nutrients			Fertilizer P <sub>2</sub> O <sub>5</sub> Rate (lb/acre) Effect on Small-Plot Soybean Yield (bu/acre) <sup>2</sup>				Fertilizer P <sub>2</sub> O <sub>5</sub> Rate (lb/acre) Effect on Early Plant Growth (grams/10 plants) <sup>3</sup>				Fertilizer P <sub>2</sub> O <sub>5</sub> Rate (lb/acre) Effect on Plant P Uptake (mg P/plant) <sup>3</sup>				Fertilizer P <sub>2</sub> O <sub>5</sub> Rate (lb/acre) Effect on Post-Harvest Bray-1 P Soil Test (ppm) <sup>4</sup>			
			Applied (lb/acre) in Manure			0	20	40	60	0	20	40	60	0	20	40	60	0	20	40	60
			N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O																
Webster	Fort Dodge	Check	0	0	0	40	38	34	35	14	13	12	12	0.44	0.38	0.34	0.35	31	32	28	29
		Low	91	58	59	44	46	48	41	11	13	13	10	0.31	0.43	0.40	0.29	21	28	32	29
		High	182	115	118	45	49	47	48	11	13	14	12	0.35	0.40	0.45	0.41	33	36	40	42